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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/083,781	02/25/2002	Michael J. Zaworotko	USF-104XC1	5476

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SALIWANCHIK LLOYD & SALIWANCHIK
A PROFESSIONAL ASSOCIATION
PO BOX 142950
GAINESVILLE, FL 32614-2950

EXAMINER	
NUTTER, NATHAN M	

ART UNIT	PAPER NUMBER
1711	

DATE MAILED: 11/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/083,781	ZAWOROTKO ET AL.	
	Examiner	Art Unit	
	Nathan M. Nutter	1711	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 August 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-55* is/are pending in the application.

4a) Of the above claim(s) *29-53* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,12-25 and 28* is/are rejected.

7)☒ Claim(s) *10,11,26 and 27* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *0502, 1002*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

In view of the Response and amendment filed 25 August 2004, the following is placed in effect:

The rejection of the claims under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement, is hereby expressly withdrawn.

The rejection of the claims under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, is hereby expressly withdrawn.

The rejection of claims 1-4, 19-21 under 35 U.S.C. 102(a) as being clearly anticipated by Stowell et al (Nano Letters), is hereby expressly withdrawn.

The rejection of claims 1-4, 12-23, 26 and 27 under 35 U.S.C. 102(e) as being clearly anticipated by Spencer et al, is hereby expressly withdrawn.

The rejection of claims 1, 13, 16 and 26 under 35 U.S.C. 102(e) as being clearly anticipated by Seeman et al, is hereby expressly withdrawn.

Claims 1-55 are pending. Claims 29-53 are withdrawn from consideration as being drawn to an invention non-elected with traverse in the Paper filed 29 March 2004. Claims 54 and 55 have been added by the amendment of 25 August 2004.

Claim Objections

Claims 10, 11, 26, 27, 54 and 55 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 7-9, 12-15, 18-21 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Kepert et al (WO 99/05151), cited by applicants.

The reference to Kepert et al discloses faceted polyhedra comprising polygon moieties and linking moieties wherein "a first polygon moiety is attached to a second polygon moiety by at least one of said linking moieties, and wherein said at least one linking moiety is attached to a vertex of said first polygon moiety and a vertex of said second polygon moiety", as herein recited in claims 1 and 28. Note page 1 (line 15) to page 2 (line 23) where the reference teaches the use of a coordinating ligand (claim 2) that may comprise a multifunctional carboxylate ligand including 1,3,5-benzenetricarboxylate molecules (claims 5, 8 and 9) between the metal atoms, and which may comprise a transition metal that may be in a 2+ transition state (claims 3, 4, 13-15 and 18-21) to complete the polyhedron.

Claims 1-5, 8, 9, 12, 17, 19-21, 24, 25 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Kepert et al (Chem. Commun., 1998), cited by applicants.

The reference to Kepert et al discloses faceted polyhedra comprising polygon moieties and linking moieties wherein "a first polygon moiety is attached to a second polygon moiety by at least one of said linking moieties, and wherein said at least one linking moiety is attached to a vertex of said first polygon moiety and a vertex of said second polygon moiety", as herein recited in claims 1 and 28. Note the Abstract and Figure 1 at page 31. The reference teaches the use of a coordinating ligand (claim 2) that may comprise a multifunctional carboxylate ligand including 1,3,5-benzenetricarboxylate (btc) molecules (claims 5, 8 and 9) between the metal atoms, and which may comprise a transition metal, such as Ni(II) that may be in a 2+ transition state and may sustain 3-fold rotational symmetry (claims 3, 4, 17 and 19-21) to complete the polyhedron. At the section titled "Footnotes and References" at page 32, first column, one such structure is defined as cubic (claim 12).

Claims 1-5, 8, 9, 12-15, 17-21, 25 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Yaghi (US Patent No. 5,648,508), cited by applicants.

The reference to Yaghi et al discloses faceted polyhedra comprising polygon moieties and linking moieties wherein "a first polygon moiety is attached to a second polygon moiety by at least one of said linking moieties, and wherein said at least one linking moiety is attached to a vertex of said first polygon moiety and a vertex of said

second polygon moiety", as herein recited in claims 1 and 28. Note column 4 (lines 39-53) for the metal ions employed, including transition metals, that may be in a 2+ transition state and may sustain 3-fold or 4-fold rotational symmetry (claims 17-21) to complete the polyhedron. The reference teaches the use of a coordinating ligand (claim 2), for linking the metal ions (claims 3 and 4), that may comprise a multifunctional carboxylate ligand, including 1,3,5-benzenetricarboxylate (btc) molecules (claims 5, 8 and 9). Note column 4 (line 54) to column 5 (line 7) and column 5 (line 62) to column 8 (line 49) for teachings concerning the ligand moiety. Note column 11 (lines 10-51), column 16, Formulas 9 and 10, and column 19, Formula 11 (a)-(c) for the teachings of claims 12-15.

Claims 1-5, 8, 9, 12, 17, 19-21, 23-25 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Yaghi et al (Nature, Vol. 378, No. 6558), cited by applicants.

The reference to Yaghi et al discloses faceted polyhedra comprising polygon moieties and linking moieties wherein "a first polygon moiety is attached to a second polygon moiety by at least one of said linking moieties, and wherein said at least one linking moiety is attached to a vertex of said first polygon moiety and a vertex of said second polygon moiety", as herein recited in claims 1 and 28. Note page 704, first column, second paragraph for the employment of Co(II), a transition metal, that may be in a 2+ transition state and may sustain 3-fold rotational symmetry (claims 17 and 19-21) to complete the polyhedron. The reference teaches the use of a coordinating ligand

(claim 2), for linking the metal ions (claims 3 and 4), that may comprise a multifunctional carboxylate ligand, including 1,3,5-benzenetricarboxylate (btc) molecules (claims 5, 8 and 9). Note Figures 1 and 2 at page 704 and the descriptive text of that entire page.

Claims 1-5, 8, 9, 12, 17, 19-21, 24 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Yaghi et al (J. Am. Chem. Soc., Vol. 118, No. 38), cited by applicants.

The reference to Yaghi et al discloses faceted polyhedra comprising polygon moieties and linking moieties wherein "a first polygon moiety is attached to a second polygon moiety by at least one of said linking moieties, and wherein said at least one linking moiety is attached to a vertex of said first polygon moiety and a vertex of said second polygon moiety", as herein recited in claims 1 and 28. Note the Abstract and the entire section titled "Introduction". Under the section titled "Experimental Section", note the metal ions employed, including transition metals, that may be in a 2+ transition state and may sustain 3-fold rotational symmetry (claims 17 and 19-21) to complete the polyhedron. The reference teaches the use of a coordinating ligand (claim 2), linking the metal ions (claims 3 and 4), that may comprise a multifunctional carboxylate ligand including 1,3,5-benzenetricarboxylate (btc) molecules (claims 5, 8 and 9) between the metal atoms.

Claims 1-5, 8, 9, 17, 19-21 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Yaghi et al (Chem. Mat., Vol. 9, No. 5), cited by applicants.

The reference to Yaghi et al discloses faceted polyhedra comprising polygon moieties and linking moieties wherein "a first polygon moiety is attached to a second polygon moiety by at least one of said linking moieties, and wherein said at least one linking moiety is attached to a vertex of said first polygon moiety and a vertex of said second polygon moiety", as herein recited in claims 1 and 28. Note column 4 (lines 39-53) for the metal ions employed, including transition metals, that may be in a 2+ transition state and may sustain 3-fold rotational symmetry (claims 17 and 19-21) to complete the polyhedron. The reference teaches the use of a coordinating ligand (claim 2), linking the metal ions (claims 3 and 4), that may comprise a multifunctional carboxylate ligand including 1,3,5-benzenetricarboxylate (btc) molecules (claims 5, 8 and 9) between the metal atoms. Note the entire three-page article.

Claims 1-5, 8, 9, 12-15, 17-21, 24 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Chui et al (Science, Vol. 283), cited by applicants.

The reference to Chui et al discloses faceted polyhedra comprising polygon moieties and linking moieties wherein "a first polygon moiety is attached to a second polygon moiety by at least one of said linking moieties, and wherein said at least one linking moiety is attached to a vertex of said first polygon moiety and a vertex of said second polygon moiety", as herein recited in claims 1 and 28. Note the Abstract, Figures 1 through 4 on page 1149 and from the final paragraph of the first column of page 1148 through the first full paragraph of the first column of page 1150 for the metal ions employed, including transition metals, that may be in a 2+ transition state and may

sustain 3-fold or 4-fold rotational symmetry (claims 17-21) to complete the polyhedron. The reference teaches the use of a coordinating ligand (claim 2), for linking the metal ions (claims 3 and 4), that may comprise a multifunctional carboxylate ligand, including 1,3,5-benzenetricarboxylate (btc) molecules (claims 5, 8 and 9). Note the entire three page article.

Claims 1-5, 8, 9, 17, 19-21, 24 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Zhang et al (Journal of Applied Physics, Vol. 87, No. 9), cited by applicants.

The reference to Zhang et al discloses faceted polyhedra comprising polygon moieties and linking moieties wherein "a first polygon moiety is attached to a second polygon moiety by at least one of said linking moieties, and wherein said at least one linking moiety is attached to a vertex of said first polygon moiety and a vertex of said second polygon moiety", as herein recited in claims 1 and 28. Note the Abstract and Figure 2 at page 6008. The reference teaches the use of a coordinating ligand (claim 2) that may comprise a multifunctional carboxylate ligand including 1,3,5-benzenetricarboxylate (btc) molecules (claims 5, 8 and 9) between the metal atoms, and which may comprise a transition metal, such as Cu(II) and Cu(III) that may be in a 2+ transition state and may sustain 3-fold rotational symmetry (claims 3, 4, 17 and 19-21) to complete the polyhedron. Note the section titled "Introduction" at page 6007 for the broad concept. Further, note the sections titled "Results and Discussion" at page 6008 and the "Conclusion" at page 6009.

Claims 1-6, 8, 9, 12-15, 17-23 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Oshio et al (J.Phys. Chem., Vol. 99, No.10), cited by applicants.

The reference to Oshio et al discloses faceted polyhedra comprising polygon moieties and linking moieties wherein "a first polygon moiety is attached to a second polygon moiety by at least one of said linking moieties, and wherein said at least one linking moiety is attached to a vertex of said first polygon moiety and a vertex of said second polygon moiety", as herein recited in claims 1 and 28. Note the Abstract and the entire section titled "Experimental Section" beginning at page 3295, first column, to page 3297, end of first column, for the metal ions employed, including Cr(III) and Ni(II) transition metals, that may be in a 2+ transition state and may sustain 3-fold or 4-fold rotational symmetry (claims 17-21) and the use of a coordinating ligand (claim 2), for linking the metal ions (claims 3 and 4), that may comprise a multifunctional carboxylate ligand, including a bifunctional carboxylate ligand and 1,3,5-benzenetricarboxylate (btc) molecules (claims 5, 6, 8 and 9). The section titled "Introduction" at page 3294 shows different metal ions bridged in the same structure (claims 19, 21 and 22).

Claims 1-4, 8, 9, 12-15, 17, 19-21, 24 and 28 are rejected under 35 U.S.C. 102(a) as being anticipated by Plater et al (Polyhedron, Vol. 20, 2001), cited by applicants.

The reference to Plater et al discloses faceted polyhedra comprising polygon moieties and linking moieties wherein "a first polygon moiety is attached to a second polygon moiety by at least one of said linking moieties, and wherein said at least one

linking moiety is attached to a vertex of said first polygon moiety and a vertex of said second polygon moiety", as herein recited in claims 1 and 28. Note the Abstract, the entire section titled "Experimental", starting at the second column of page 2293, Figure 1 on page 2295, Figure 2 on page 2298, Figure 3 on page 2299 and Figure 4 on page 2300. Note the section titled "results and discussion" beginning at the first column of page 2296 for the metal ions employed, including transition metals, that may be in a 2+ transition state and may sustain 3-fold or 4-fold rotational symmetry (claims 17-21)and their bond angles. The reference teaches the use of a coordinating ligand (claim 2), for linking the metal ions (claims 3 and 4), that may comprise a multifunctional carboxylate ligand, including 1,3,5-benzenetricarboxylate (btc) molecules (claims 5, 8 and 9). Note Tables 1 through 8 on pages 2296-7.

Claims 1-5, 12-14, 17, 19-21 and 28 are rejected under 35 U.S.C. 102(a) as being anticipated by Wu et al (Inorganic Chemistry Communications, Vol. 4, 2001), cited by applicants.

The reference to Wu et al discloses faceted polyhedra comprising polygon moieties and linking moieties wherein "a first polygon moiety is attached to a second polygon moiety by at least one of said linking moieties, and wherein said at least one linking moiety is attached to a vertex of said first polygon moiety and a vertex of said second polygon moiety", as herein recited in claims 1 and 28. Note the Abstract and Figures 1 through 4 for the metal ions employed, including transition metals, that may be in a 2+ transition state and may sustain 3-fold or 4-fold rotational symmetry (claims

17 and 19-21) and the bond angles contemplated, as herein claimed. The reference teaches the use of a coordinating ligand (claim 2), for linking the metal ions (claims 3 and 4), that may comprise a multifunctional carboxylate ligand, including 1,3,5-benzenetetracarboxylic anhydride (btc) molecules (claims 5).

Claims 1-5, 12-15, 17, 19-24 and 28 are rejected under 35 U.S.C. 102(a) as being anticipated by Shi et al (Polyhedron, Vol. 20, 2001), cited by applicants.

The reference to Shi et al discloses faceted polyhedra comprising polygon moieties and linking moieties wherein "a first polygon moiety is attached to a second polygon moiety by at least one of said linking moieties, and wherein said at least one linking moiety is attached to a vertex of said first polygon moiety and a vertex of said second polygon moiety", as herein recited in claims 1 and 28. Note the Abstract for the metal ions employed, including transition metals, that may be in a 2+ transition state and may sustain 3-fold or 4-fold rotational symmetry (claims 17-21) and the use of a coordinating ligand (claim 2), for linking the metal ions (claims 3 and 4), that may comprise a multifunctional carboxylate ligand, including 1,3,5-benzenetetracarboxylic acid (btec) molecules (claim 5).

Claims 1-7, 17-21 and 28 are rejected under 35 U.S.C. 102(a) as being anticipated by Bourne et al (Crystal Engineering, Vol. 4, 2001), cited by applicants.

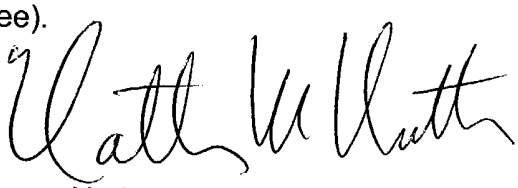
The reference to Bourne et al discloses faceted polyhedra comprising polygon moieties and linking moieties wherein "a first polygon moiety is attached to a second

polygon moiety by at least one of said linking moieties, and wherein said at least one linking moiety is attached to a vertex of said first polygon moiety and a vertex of said second polygon moiety", as herein recited in claims 1 and 28. Note the Abstract for the metal ions employed, including transition metals, that may be in a 2+ transition state and may sustain 3-fold or 4-fold rotational symmetry (claims 17-21) to complete the polyhedron. The reference teaches the use of a coordinating ligand (claim 2), for linking the metal ions (claims 3 and 4), that may comprise a multifunctional carboxylate ligand, including 1,3-benzenedicarboxylic (bdc) molecules (claims 5-7).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan M. Nutter whose telephone number is 571-272-1076. The examiner can normally be reached on 9:30 a.m.-6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James J. Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Nathan M. Nutter
Primary Examiner
Art Unit 1711

nmn

4 November 2004